

S/058/62/000/002/021/053  
A058/A101

AUTHORS: Ryazanov, A. I., Vol'fson, A. I., Chirginova, G. D.

TITLE: The effect of ultrasonic vibrations on the process of anode dissolution of palladium

PERIODICAL: Referativnyy zhurnal, Fizika, no. 2, 1962, 43-44, abstract 20331 (V sb. "Primeneniye ul'traakust. k issled. veshchestva", no. 14, Moscow, 1961, 139-143)

TEXT: The effect of ultrasonic vibrations on the process of anode dissolution of palladium in a 6n. solution of hydrochloric acid was studied. It was found that utilization of ultrasonic vibrations with intensity 2 watt/cm<sup>2</sup> leads to appreciable depolarization of the anode process of palladium dissolution. Using ultrasonic action makes it possible to intensify the process of anode dissolution of palladium and to produce concentrated solutions of palladium chloride of the order of 500 g/l instead of the 300 g/l that are the limit for anode dissolution of palladium without ultrasonic vibrations. ✓

[Abstracter's note: Complete translation]

Card 1/1

VOL'FSON, A.I.; RYAZANOV, A.I.; CHIGRINOVA, G.D.

Electrochemical dissolution of palladium in hydrochloric acid.  
Zhur. prikl. khim. 34 no.1:173-176 Ja '61. (MIRA 14:1)  
(Palladium chloride)

S/058/63/000/001/108/120  
A062/A101

AUTHORS: Ryazanov, A. I., Kudryavtsev, B. B.

TITLE: Dependence of the depolarizing effect of ultra-sound on the pH of a solution

PERIODICAL: Referativnyy zhurnal, Fizika, no. 1, 1963, 70, abstract 12h418  
(In collection: "Primeneniye ul'trazvukov. k issled. veshchestva".  
no. 16, Moscow, 1962, 13 - 24)

TEXT: The effect of ultra-sound on the process of electrolytic separation of hydrogen from a 0.25 standard solution of  $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$  on a Fe cathode was investigated. Measurements were carried out in an electrolyzer made of organic glass. The electrode potentials were measured by the direct compensation method. The acidification of the solution was effected with the aid of chemically pure sulfuric acid, the alkalination with the aid of caustic soda of analytically pure quality. Measurements of the pH of the solutions were carried out by means of a tube potentiometer. Thermostating of the installation was realized with an accuracy to  $1^\circ\text{C}$ . The intensity of the ultra-sound vibrations was  $0.5 \text{ watts/cm}^2$ .

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Dependence of the depolarizing effect of...

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The measurements were carried out under conditions of originating a stationary sound wave. The article gives graphs of the dependence of the depolarization effect and of the ultra-sound potential on the pH of the solution for the range of the investigated temperatures and current densities. The reduction of the overload under the action of ultrasonic vibrations is maximum in the case of neutral solutions and smaller in the case of acid and strong alkaline solutions. The values of the depolarization effects, obtained for various electrolytes, fall well on a common curve representing the dependence of the depolarization effect on the pH of the solution. Comparing the obtained experimental data with the theory leads to the conclusion that ultrasonic depolarization is not only related with the intermixing and with the desorption effect of cavitation bubbles, but results from a deeper effect of the ultrasonic vibrations on the individual steps of the general discharge reaction of hydrogen ions (expansion of the O-H bonds in alkaline solutions, ion dehydration in acid solutions).

I. Ratinskaya

[Abstracter's note: Complete translation]

Card 2/2

S/058/63/000/001/109/120  
A062/A101

AUTHORS: Ryazanov, A. I., Kudryavtsev, B. B.

TITLE: About the depolarizing effect of ultra-sound

PERIODICAL: Referativnyy zhurnal, Fizika, no. 1, 1963, 70, abstract 12h419  
(In collection: "Primeneniye ul'trakust k issled. veshchestva".  
no. 16, Moscow, 1962, 25 - 32)

TEXT: An investigation was made on the process of the ultrasonic effect on the energy of the activation  $A$  in an electrochemical process of separating hydrogen from a 0.25 standard solution of  $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$  under conditions of a constant potential  $E$  of the polarized electrode; the pH of the solution was 6.3. Isopotential straight lines of the dependence of the current density  $i$  on the inverse magnitude of the absolute temperature  $1/T$  are plotted for  $E = 800, 900, 1,000$  and  $1,200$  millivolt. The angle  $\varphi$  of the slope of the straight lines yields  $A = -2.3 R \text{tg } \varphi$  ( $R$  is gas constant) in an ultrasonic field and without that field. It is found that the ultra-sound reduces the magnitude of  $A$ ; and this to the larger extent the smaller the value of  $E$ . At sufficiently large values of

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About the depolarizing effect of ultra-sound

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E the change of A is equal to zero. In that case the ultrasonic field exerts an influence only on the kinetics of the diffusion process through intermixing. On the basis of measurements of A in an ultrasonic field and without that field coefficient  $\alpha$  is calculated which determines the active portion of the electrode potential. It is shown that an ultrasonic field has an influence only on the limiting stages of the electrode process. ✓

I. Kanevskiy

[Abstracter's note: Complete translation]

Card 2/2

RYAZANOV, A.I.; CHIGRINOVA, G.D.

Effect of ultrasonic vibrations on the anodic dissolution of  
bismuth in hydrochloric acid solutions. Prim.ul'traakust. k  
issl.veshch. no.16:39-46 '62. (MIRA 16:4)  
(Ultrasonic waves—Industrial applications)  
(Electrochemistry)

RYAZANOV, A.I.; CHIGRINOVA, G.D.

Electrochemical dissolution of bismuth in hydrochloric acid. Zhur.prikl.  
khim. 37 no.1:84-87 Ja '64. (MIRA 17:2)



RYAZANOV, A.I.

Use of ultrasound in the production of metallic salts. Trudy  
IREA no.25:483-492 '63. (MIRA 18:6)

CHIKHAROVSKIY, I.M.; HOCHULENKO, N.A.; RYAZANOV, A.N.

Relative localization of interference bands in transmitted and  
reflected light. Opt. i spektr. 18 no.1:102-108 Ja '65.

(MIRA 18:4)

L 17878-66 EWT(1)

ACC NR: AP5027673

SOURCE CODE: UR/0051/65/019/005/0792/0799

AUTHOR: Miloslavskiy, V. K.; Ryazanov, A. N.

ORG: none

21, 44, 55  
TITLE: Multiple-wave interference in a wedge

SOURCE: Optika i spektroskopiya, v. 19, no. 5, 1965, 792-799

TOPIC TAGS: wave mechanics, calculation, light reflection coefficient, light interference, light source

ABSTRACT: Multiple-wave interference from a point source situated near an air wedge was theoretically interpreted by plotting the sequence of imaginary sources formed by multiple reflection from two surfaces of the wedge. The sequence of coherent sources was situated in the main section of the wedge (in the plane perpendicular to the side of the wedge) on the circle passing through the real source and having a center in the side of the wedge. The circle on which the localization of interference fringes was observed passed through the side of the wedge and was tangent to the circle of coherent sources in the point of a true source. It was shown that the conditions of a distinct visibility are controlled

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UDC: 535.412

L 17878-66

ACC NR: AF5027673

by the following inequality:  $|2t' \cos \eta_1 - 2t'' \cos \eta_2| \leq \frac{\lambda}{2N}$ , where  $t'$  and  $t''$  are the wedge thicknesses in the points of intersection of the wedge surface with the ray passing to the point of observation,  $\eta_1$  and  $\eta_2$  are angles of incidence, and  $N$  is the coefficient of reflection of the wedge surfaces. The linear size of the source can be evaluated from  $2\Delta l \cos \eta = 2\epsilon l x \cos \eta \leq \frac{\lambda}{2N}$  (where  $\eta$  is the average angle of incidence,  $l_x$  is the length of the source by the  $x$  axis, and  $\epsilon$  is the wedge angle) provided the source is situated near the wedge and the observation point is sufficiently distant. At  $\epsilon \sim 1'$ ,  $\lambda \approx 5 \cdot 10^{-5}$  cm,  $N = 30$ ,  $\cos \eta = 1$ , the  $l_x \leq 0.1$  mm. Therefore, the pinpoint aperture ( $\sim 0.1$  mm) in a nontransparent screen illuminated by monochromatic light ( $\lambda = 5461 \text{ \AA}$ ; mercury lamp) by using a microcondensor with a small focal point ( $\sim 1$  mm.) was used as the light source. The wedge was made of two plane-parallel glass plates covered by well-reflecting, partly transparent layers of silver. The required angle  $\epsilon$  was obtained by using mica interlayers. The interference pattern was observed under a microscope. The interference pattern was localized on the circle passing through the source. The circle was mobile; its radius and center depended on the angle of the wedge and the distance of the light source from the surface of the wedge. When the observation was made from the side of the apex the circle was displaced closer to the wedge with increased distance of the source from the wedge surface. The interference fringes

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ACC NR: AP5027673

2  
were best visible at large angles of observation. The experiments confirmed the theoretical conclusions that sufficient visibility of interference is present at  $\epsilon^2 \leq \frac{3}{4} N^{-2} m^{-1}$ ; where  $m$  is the order of interference, not necessarily an integral number. At  $m = 10$  and  $N = 50$  the  $\epsilon < 3^\circ$ ; at  $N \sim 2$  the  $\epsilon < 5^\circ$ . Therefore, an increase in the reflection coefficient of mirrors forming the wedge requires a smaller wedge angle to produce distinct visibility. The effect of the order of interference is expressed by the fact that the greatest visibility of the pattern is present at the large angles of observation, where splitting of the narrow Fizeau lines into p- and s- components was observed. The authors thank I. N. Shklyarevskiy and P. G. Yarova for a discussion of the results. Orig. art. has: 14 formulas and 3 figures.

SUB CODE: 20/ SUBM DATE: 07Mar64/ ORIG REF: 005/ OTH REF: 008

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L 15986-66 EWT(1)/EWT(m)/T/EWP(e) IJP(c) WH  
 ACC NR: AP6005475 SOURCE CODE: UR/0368/66/004/001/0065/0067  
 AUTHOR: Shklyarevskiy, I. N.; Korneyeva, T. I.; Ryazanov, A. N. 49  
 ORG: none 0  
 TITLE: An interferometer method for determining the refractive indices of mica 15  
 SOURCE: Zhurnal prikladnoy spektroskopii, v. 4, no. 1, 1966, 65-67  
 TOPIC TAGS: refractive index, mica, interferometer, spectrum  
 ABSTRACT: A method is proposed for determining the dispersion of birefringence in silvered mica from a single interference pattern by measuring the wavelengths of the interference lines. The procedure is a modification of a previously proposed method (I. N. Shklyarevskiy, Opt. i spektr., 6, 780, 1959), and may be used for measuring the dispersion of refractive indices  $\mu_y$  and  $\mu_z$  of mica in the visible region of the spectrum. Equations are derived for determining these indices and dispersion curves for the indices of refraction are given. The results agree satisfactorily with the tabulated values for the indices of refraction of Ural muscovite. Orig. art. has: 4 figures, 5 formulas.  
 SUB CODE: 20/ SUBM DATE: 19Apr65/ ORIG REF: 004/ OTH REF: 002  
 Card 1/1 20 UDC: 535.417 2

24.3300

39691  
S/051/62/013/001/013/019  
E032/E114

AUTHOR: Ryazanov, A.N.

TITLE: Increase of the resolution of telescopic systems for two point-sources of very different intensity

PERIODICAL: Optika i spektroskopiya, v.13, no.1, 1962, 129-132

TEXT: It is pointed out that objectives of the type discussed by G. Toraldo di Francia (Nuovo Cimento, 9, 1952, 426) suffer from the disadvantage that they have a low focal ratio although they do improve the resolution. The author has therefore developed a method for the design of special homogeneous objectives. These objectives consist of a series of concentric annular apertures. For example, the amplitude distribution in the case of a set of four apertures with diameters  $D$ ,  $5D/4$ ,  $2D/4$  and  $D/4$  is given by:

$$A(x) = 0.276 J_0(x/4) + 0.307 J_0(2x/4) + 0.281 J_0(3x/4) + 0.137 J_0(x).$$

The corresponding intensity distribution is shown in Fig.3.  
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The distance between the principal maximum and the first subsidiary maximum can be extended still further by using five rings, in which case the result is as shown in Fig.4. All the annular apertures in these objectives are in the same phase, which ensures a much higher focal ratio as compared with the case discussed by G. Toraldo di Francia, i.e. there are fewer obstacles to practical applications of such objectives. A disadvantage of the present objectives is that they cannot be used to improve the resolution of details on extended objects. There are 5 figures. ✓

SUBMITTED: June 3, 1961

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Increase of the resolution of ...

S/051/62/013/001/013/019  
E032/E114

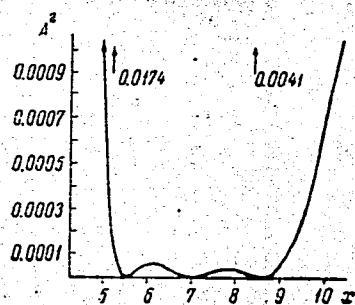


Fig. 3

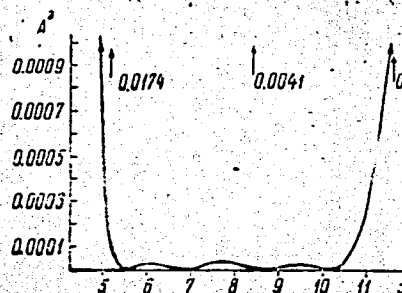


Fig. 4

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RYAZANOV, A.N.

Possibility of using amplitude-phase objectives to resolve two  
nomonochromatic light sources. Opt. i spektr. 8 no.5:726-727 My '60.  
(MIRA 13:9)

(Optics, Physical)

SOV/51-7-3-18/21

AUTHOR: Ryazanov, A.N.

TITLE: On the Possibility of Resolution of Two Light Sources with Strongly Differing Intensities

PERIODICAL: Optika i spektroskopiya, Vol 7, Nr 3, pp 417-420 (USSR)

ABSTRACT: On diffraction by an objective aperture we obtain a central maximum and a system of weaker secondary maxima whose intensities in the case of a slit objective are 0.047, 0.017, 0.008 etc., of the central-maximum intensity. If the difference in the intensities of two light sources is of the order of the difference between the intensities of the central maximum and the first secondary maximum, then such sources cannot be resolved by means of a uniform objective, even if the angular separation of the two sources is somewhat larger than that postulated by Rayleigh's criterion. To resolve such two sources it is necessary to lower the background around the central maximum. This may be achieved by means of slit objectives, but at the price of broadening of the central maximum. The method of calculation employed was the same as in earlier work (Ref 2). For three pairs of slits with a common axis of symmetry and distances between the corresponding pairs of  $2d$ ,  $(4/3)d$  and  $(2/3)d$ , the central maximum and the first side maximum are

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On the Possibility of Resolution of Two Light Sources with Strongly Differing Intensities

of the same intensity, as shown in Fig 1a (continuous curve). For four pairs of slits with distances between them of  $2d$ ,  $(3/2)d$ ,  $d$  and  $(1/2)d$  the central maximum is somewhat broadened but the first side maximum is further away (Fig 1b, chain curve). For five pairs of slits the central maximum is practically of the same breadth as in the case of four pairs of slits but the first side maximum is moved away still further (Fig 1c, dashed curve). Fig 2 shows the distribution of the centres of slits corresponding to the cases a, b and c of Fig 1. The theoretical results were verified by means of apparatus shown in Fig 3. Here S is the source of light (an incandescent or a mercury lamp),  $c\phi$  is a green light filter,  $L_1$  is a lens which focuses the image of the light source on to a slit D of  $\sim 0.05$  mm width;  $L_2$  is a lens which directs a parallel beam on to a slit objective P which is placed in front of an objective of a photographic camera  $\phi$ . The objective P is a glass plate covered with an opaque layer of aluminium in which the slits are produced and by removing aluminium by means of a dividing machine. Fig 4 (curves a, b and c) shows that the experimental distributions of intensity are in good agreement with the theoretical curves of Fig 1

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On the Possibility of Resolution of Two Light Sources with Strongly Differing Intensities

(the curves of Fig 4 were obtained by means of a recording microphotometer MF-4). By placing a Wollaston prism between the lens  $L_2$  and the slit D and a polaroid between the lens  $L_1$  and the slit D, the author obtained two images of the slit D in the focal plane of the camera. By rotating the Wollaston prism one of the images can be positioned in the region of the first or second side maxima of the other image. By rotating the polaroid one of the images produced by a uniform (non-slit) objective P may be made to coincide with the background of the second image (Fig 5a). When an objective with five pairs of slits is used a clear separation of the two images of the slit D can be obtained (Fig 5d). Acknowledgments are made to Prof. K.D. Sinelnikov who directed this work and to Decent I.N. Shklyarevskiy for their advice. There are 5 figures and 2 references, 1 of which is Soviet and 1 Italian.

SUBMITTED: November 25, 1958

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SINEL'NIKOV, K.D.; RYAZANOV, A.N.

Increasing the resolving power of optical systems. Opt. i spektr.  
5 no. 2:184-190 Ag '58. (MIRA 11:10)

1. Khar'kovskiy gosudarstvennyy universitet.  
(Lenses)

RYAZANOV, A.N.

Possibility of resolving two light sources with sharply differing intensities. Opt. i spektr. 7 no.3:417-420 S '59. (MIRA 13:3)  
(Optics)

SHLYAREVSKIY, I.N.; RYAZANOV, A.N.

Measuring the refractive index of zinc sulfide and cryolite thin films.  
Zhur.tekh.fiz.26 no.3:659-663 Mr '56. (MIRA 9:7)  
(Refractive index) (Zinc sulfide) (Cryolite)



RYAZANOV, A. N.

MEASUREMENT OF THE REFRACTIVE INDICES  
OF THIN LAYERS OF ZINC SULFIDE AND CRYOLITE

I N Shalyarevskii and A N Ryazanov

Zh. tekhn. Fiz., Vol. 26, No. 3, 659-63 (1956). In Russian.

Contrary to the findings of Schulz and Scheibner (Abstr. 1762/1951), the authors have found that the refractive index of thin ZnS films (as used in multi-layer coatings) is equal to that of ZnS in bulk, whereas the refractive index of cryolite films depends on their thickness. The "filling" factor of (porous) cryolite films, whose pores have been filled with a liquid, calculated from the equation  $n^2 = q_1 n_1^2 + q_2 n_2^2$  [where  $n$ ,  $n_1$  and  $n_2$  are the refractive indices of the total film, its cryolite substance and the substance in its pores respectively, while  $q_1$  and  $q_2$  are the fractional volumes of the cryolite and the pores ( $q_1 + q_2 = 1$ )], has been found to closely agree with experiment; this finding proves, in turn, that the liquids used (glycerol, paraffin oil, nitrobenzene, iodomethylene) fill thoroughly the pores in ZnS.

F. Lachman

535.323

RYAZANOV, A.N., inzh.

Rail inspector Mikhalev. Put' i put. khoz. no.6:45 Je '58.

(MIRA 11:6)

1. Stantsiya Zhilevo Moskovsko-Kursko-Donbasskoy dorogi.

(Mikhalev, Ivan Konstantinovich)

(Zhilevo--Railroads--Maintenance and repair)

AL'BREKHT, V.G., prof. (Novosibirsk); RYAZANOV, A.N., inzh. (Novosibirsk);  
MONAKHOV, B.F., inzh. (Novosibirsk)

What should be the speed of train traffic during the period of track  
overhauling. Put' i put.khoz. 6 no.6:19-20 '62. (MIRA 15:7)  
(Railroads--Maintenance and repair)  
(Railroads--Train speed)

RYAZANOV, A.N.

Enhancement of the resolving power of telescopic systems relative  
to two point sources of light of greatly different intensity.

Opt.i spektr. 13 no.1:129-132 Л '62.

(MIRA 15:7)

(Lenses)

AL'BREKHT, V.G., prof. (Novosibirsk); RYAZANOV, A.N., inzh. (Novosibirsk)

Using the tamping machine for track stabilization. Put' i put.khos.  
7 no.2:16-17 '63. (MIRA 16:2)  
(Railroads—Track) (Railroads—Equipment and supplies)

L 21174-65 ENT(1)/EIP(a)/ENT(m)/T/EEC(b)-2 RAEM(a)/IJP(c) WH

ACCESSION NR: AP5003029

S/0051/65/018/001/0102/0108

AUTHOR: Shklyarevskiy, I. N.; Nosulenko, N. A.; Ryazanov, A. N.

TITLE: Investigation of relative localization of interference fringes in transmitted and reflected light

SOURCE: Optika i spektroskopiya, v. 18, no. 1, 1965, 102-108

TOPIC TAGS: optical interference, interference frige, silver film, mica, transmitted light, reflected light, phase shift

ABSTRACT: The shift in the interference minima of reflected light, relative to the maxima of the transmitted light, were measured in silvered mica strips with the aid of lines of equal chromatic order, as a function of the thickness of the silver layer, with an aim at ascertaining whether these shifts are affected by the thickness and effective optical constants of the silver layers. The surface of a plane-parallel mica strip was covered with a partially transparent layer of silver with approximate thickness 500 Å, and on one third of the opposite surface. The investigated layer of silver was deposited on the remaining two thirds, as shown in Fig. 1 of the enclosure, which shows also a diagram of the optical system

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L 21174-65  
ACCESSION NR: AP5003029

employed. The phase jumps, resulting from the reflection of light from the system comprising mica + silver layer + air, and corresponding to different thicknesses of silver layers, were determined for silver layers 400, 500, and 600 Å thick and for wavelengths ranging from 450 to 630 nm. The results do not differ greatly from the theoretical values, and the reasons for differences are briefly discussed. Orig. art. has: 7 figures, 13 formulas, and 1 table.

ASSOCIATION: None

SUBMITTED: 06Dec63

ENCL: 01

SUB CODE: OP

NR REF SOV: 010

OTHER: 004

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L 21174-65

MISSION NR: AP5003029

ENCLOSURE: 01

0

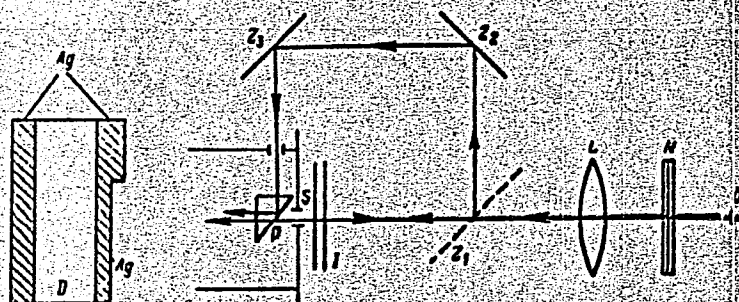


Fig. 1. Left: Section through the investigated silver-coated mica (D)  
Right: Optical diagram of set-up: P - prism, S - slit, Z - mirror, L - lens,  
I - interferometer plate, O - point source

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*RYAZANOV, A. N.*

51-5-15/26

AUTHORS: Shklyarevskiy, I.N. and Ryazanov, A.N.

TITLE: Dispersion of the Phase Change of Thin Aluminium Layers.  
(Dispersiya fazovogo skachka tonkikh plenok *alyumi*niya)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol.2, Nr 5, pp.645-650  
(USSR)

ABSTRACT: This paper reports measurements of the phase change which occurs on reflection of light at the boundary of thin layers of Al and ZnS. The measurements were carried out using an interferometric technique developed by Shklyarevskiy (Ref.3) for determination of the optical constants of metals. The samples were prepared by evaporation in vacuo and their cross-sections are shown in Fig.1. A semi-transparent layer of Al was deposited on a glass plate. On Al a ZnS layer was deposited, and on ZnS a thick layer of Al (Fig.1a) or two layers of Al of two different thicknesses (Fig.1b). A sample was placed in front of a spectrograph slit and illuminated with a parallel beam of white light. The arrangement used is shown in Fig.2, where S = source of light, P = sample, *cn* = spectrograph, Z = half-silvered mirror. Fig.3 shows results obtained with an ISP-67 (*MCN*-67) spectrograph. The two first interferograms (I and II) cover 6500-4900 and 5000-4100 Å, respect-

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Dispersion of the Phase Change of Thin Aluminium Layers. 51-5-15/26

ively, and were obtained for a sample shown in Fig.1a. The upper diffuse lines are due to Al-ZnS-air; the lower lines are due to Al-ZnS-Al, with iron lines (for calibration) superimposed on them. These lines are displaced towards short wavelengths by a value which represents a negative phase change at the boundary ZnS-Al. The phase change, denoted by  $\psi(\text{ZnS-Al})$ , is plotted against wavelength,  $\lambda$ , in Fig.4 (the continuous curve represents the present authors' results, the broken curve- the results calculated from optical constants of Al measured by O'Bryan, Ref.5). III and IV in Fig.3 were obtained for a sample shown in Fig.1b. The upper lines are due to Al-ZnS-Al (thin layer:-195 Å). They are displaced towards longer wavelength which indicates that the phase change on reflection at a thin Al layer is less than at a thick layer. Fig.3, V was obtained for an even thinner Al layer (50 Å) and the phase change was found to be still less than in III and IV. On decrease of layer thickness to 50-80 Å the displacement of the equal-chromatic-order lines was greater than in the absence of such layers. Presence of such layers on ZnS deteriorates the sharpness of these lines. With decrease of the layer

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Dispersion of the Phase Change of Thin Aluminium Layers. 51-5-15/26

thickness the phase change becomes negative (Fig.5, where numbers at each curve denote layer thickness in angstroms). Fig.6, I, shows dependence of the phase change  $\psi$  on thickness  $t$  (in  $\text{\AA}$ ) for  $\lambda = 5500 \text{\AA}$ . Curve II in Fig.6 is calculated from the optical constants for bulk Al given by O'Bryan (5). At the top right-hand corner of Fig.6 two parallel dashes denote the value of  $\psi$  for bulk Al. The results in Fig.6 are taken by the authors as an indication that the optical constants of thin Al films vary with thickness. This conclusion forms the basis of the authors' explanation of the observed behaviour of Al films. The authors thank Prof. K.D. Sinel'nikov for advice. There are 7 figures, 13 references, 8 of which are Slavic.

ASSOCIATION: Kharkov State University. (Khar'kovskiy Gosudarstvennyy Universitet)

SUBMITTED: October 15, 1956.

AVAILABLE: Library of Congress.

card 3/3

RYAZANOV, A. N.

USSR/Fitting Out of Laboratories - Instruments, Their Theory, Construction, and Use, H

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 61987

Author: Shklyarevskiy, I. N., Moloslvaskiy, V. K., Pakhomova, O. S.,  
Ryazanov, A. N.

Institution: None

Title: Interferometric Method of Determining Dispersion of Liquids in  
Ultraviolet Region

Original

Periodical: Uch. zap. Khar'kovsk. un-ta, 1955, 64, 147-150

Abstract: Liquid under study is introduced into gap between aluminized quartz plates clamped to slit of ISP-22 quartz spectrograph. Refraction index of distilled water determined by this method coincides with literature data within  $5 \cdot 10^{-4}$ . Determination of dispersion requires minute amount of liquid, 0.25 drop. Method is applicable to light absorbing liquids.

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RYAZANOV, A. N.

SHKLYAREVSKIY, I.N.; RYAZANOV, A.N.

Dispersion of the phase jump of thin aluminum foils. Opt.1  
spektr. 2 no.5:645-650 My '57. (MIRA 10:7)

1. Khar'kovskiy gosudarstvennyy universitet.  
(Aluminum--Optical properties) (Interferometry)

SHKLYAREVSKIY, I.N.; MILOSLAVSKIY, V.K.; PAKHOMOVA, O.S., RYAZANOV, A.N.

Interferometric technique for determining the dispersion of  
liquids in the ultraviolet region. Uch.zap. KGU 64  
no.6:147-150 '55. (MIRA 10:7)  
(Interferometry) (Dispersion)

AUTHORS: Sinel'nikov, K.D. and Ryazanov, A.N.

SOV/51-5-2-14/26

TITLE: On the Increase of the Resolving Power of Optical Systems  
(K voprosu o povyshenii razreshayushchey sposobnosti opticheskikh sistem)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol 5, Nr 2, pp 184-190 (USSR)

ABSTRACT: In 1943 Schelkunoff (Ref 1) showed that it is possible to increase the directivity of a radiator (an aerial) consisting of a linear chain of vibrators by means of a suitable choice of the phases and amplitudes in each vibrator. In 1952 Toraldo di Francia (Ref 3) applied Schelkunoff's methods to calculation of the resolving power of an objective consisting of several concentric rings. It is difficult to prepare such an objective and, therefore, the present authors discuss theoretically and apply experimental checks to a simpler system consisting of a series of slits. Such a series of slits may be prepared by evaporating an opaque layer of aluminium on to a glass plate and by ruling the slits on it. The system discussed consists of one or more pairs of slits and the theoretically required ratios of intensities

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On the Increase of the Resolving Power of Optical Systems

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between the various pairs of slits may be obtained by varying the width of the slits. The theoretically required phase relationships between the slit pairs can be produced in practice by evaporating a layer of ZnS or cryolite of required thickness onto such a slit system. The advantage of using pairs of slits can be seen from Fig 4 which shows the zero maximum on diffraction from a single slit 4 mm wide (Fig 4a) and the diffraction image produced by two narrow slits 0.04 mm wide separated from each other by 4 mm (Fig 4b). In Fig 4b the central maximum is half the width of the central maximum in Fig 4a. Fig 5 shows the results obtained using three (Fig 5a) and four (Fig 5b) pairs of slits. Fig 5v shows the results for three pairs of slits with correct phase relationships between them. Fig 6 shows an image of two closely spaced slits observed using a uniform objective (Fig 6a) and an objective consisting of three pairs of slits (Fig 6b). Fig 6v and g show the image produced by objectives consisting of four pairs of slits with correct amplitude and phase relationships respectively. The results obtained indicate that considerable improvement of the resolving power may be obtained by using objectives consisting of pairs of slits. For

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On the Increase of the Resolving Power of Optical Systems

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example Fig 6 shows that a uniform objective fails to resolve two closely spaced objects, which can be easily resolved using three or four pairs of slits. The authors suggest a correction to the Rayleigh criterion for the resolving power. There are 6 figures, 1 table and 6 references, 4 of which are Soviet, 1 Italian and 1 American.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet (Khar'kov State University)

SUBMITTED: September 16, 1957

Card 3/3      1. Optical systems--Theory    2. Optical systems--Design    3. Optical systems--Test results

*RYAZANOV A.N.*

Category : USSR/Optics - Physical Optics

K-5

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4938

Author : Shklyarevskiy, I.N., Miloslavskiy, V.K., Pakhomova, O.S., Ryazanov, A.N.  
Title : Interferometric Method for Determining the Dispersion of Liquids in the Ultraviolet Region

Orig Pub : Uch. zap. Khar'kovsk. un-ta, 1955, 6, 147-150

Abstract : The previously described (Referat Zh. Fizika, 1955, 23123) interferometric method for determining the dispersion of liquids and solids, based on the application of the lines of equal chromatic order, has been expanded to determine the dispersion of liquids in the ultraviolet region. The investigated liquid is introduced into a gap between aluminized quartz plates, which are attached to the slit of an ISP-22 quartz spectrograph. The thickness of the gap is regulated by means of screws. The resultant spectrogram is used to determine the wavelengths of many interference lines, to determine their interference order, and knowing the thickness of the gap, to calculate the index of refraction for many wavelengths. The order of the interference is determined by filling the gap half with

Card : 1/2

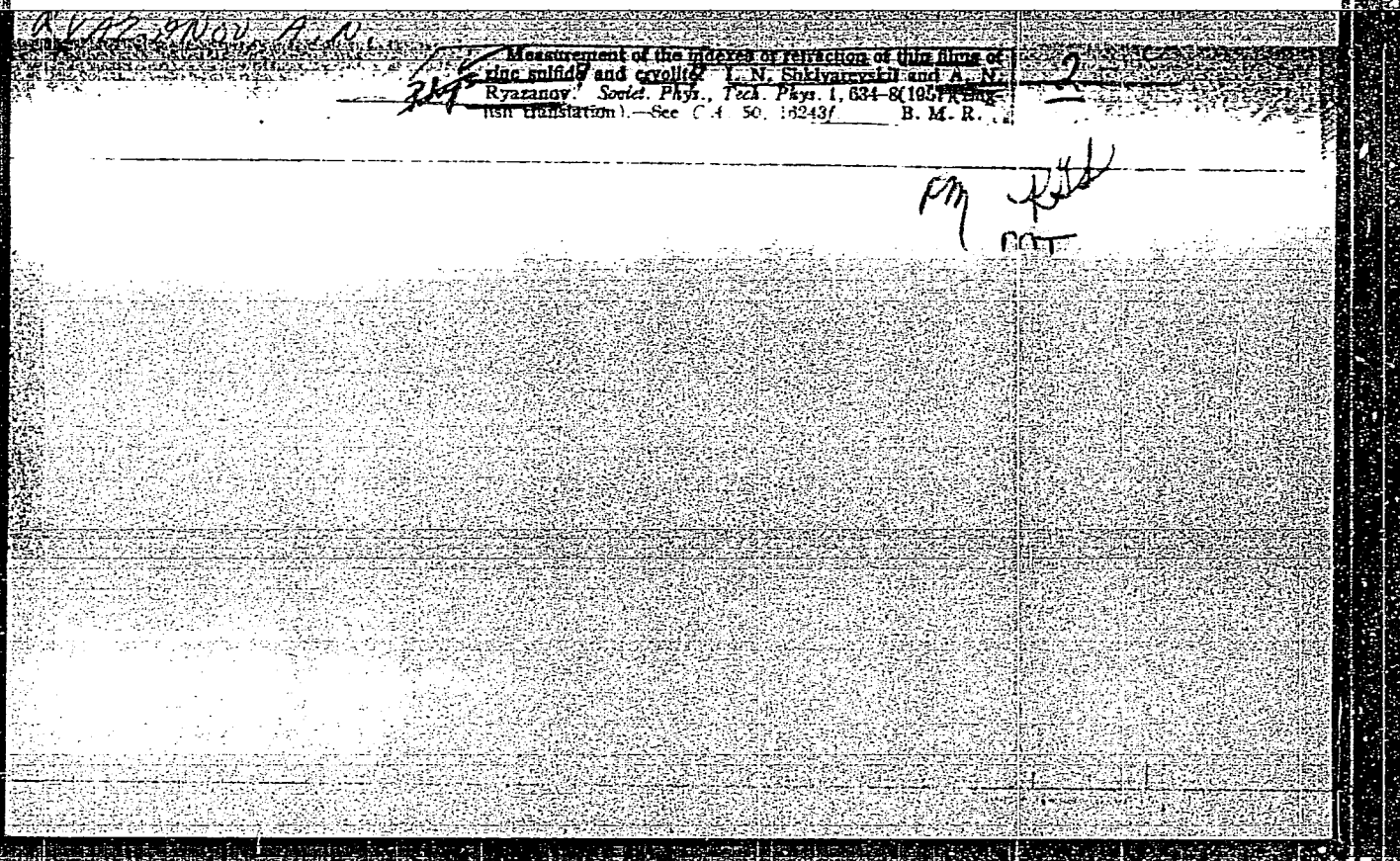
Category : USSR/Optics - Physical Optics

K-5

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4938

liquid and half with air and obtaining on the spectrogram two systems of lines. The accuracy of the measurement is  $5 \times 10^{-4}$ . The above method requires small amounts of substance and is applicable to absorbing liquids.

Card : 2/2



Dispersion of the phase jump of thin aluminum films

As the experiments were carried out, the films were illuminated with a powerful parallel beam of white light, and interferences formed in the layer of ZnS were projected on the slit of the spectrograph. The total phase shift,  $\psi_1(\text{ZnS-Al})$  and  $\psi_2(\text{ZnS-Al})$  corresponding to wave lengths of light  $\lambda_1$  and  $\lambda_2$ , resp., was calc. from the derived equations:  $\psi_1(\text{ZnS-Al}) = 2\pi\mu_1/\lambda_1((\psi_1(\text{ZnS-Al})\lambda_1/2\pi\mu_1) - m((\lambda_2/\mu_2) - (\lambda_1/\mu_1)))$  and the phase jump from  $\tan \psi = 2\mu_1\mu_2/(\mu_1^2 - \mu_2^2 - (\mu_2^2))$  (where,  $\mu_1 = n$  of ZnS;  $\mu_2$  and  $\mu_3 = n$  of ZnS for light with wave lengths  $\lambda_1$  and  $\lambda_2$ ;  $\mu$  and  $\mu_2 =$  optical consts. of Al for interference lines of  $m$ -order). For Al films 50-80 Å. thick the numerical value of phase shift of lines of equal chromatic order increased and its sign became neg. For Al films with thickness 300 Å. and more, the exptl. and theoretical phase jump was equal to that of the massive layer. With the decrease in the film thickness the phase jump decreased at a higher rate than predicted by the theory, which is in agreement with the results of Round (C.A. 31, 7722) and Feust (C.A. 45, 2738). An attempt to select such pairs of values of  $\mu_{\text{expt}}$  and  $(\mu_2)_{\text{expt}}$ , which would give the same theoretical and exptl. value for the phase jump as the function of film thickness, has failed.

A. P. Kotloby

RYAZANOV, A. I.

84-287

Stavropol'skiy Krai. Zemel'noe Upravlenie, Prirodnye uslovia Severo-Kavkazskogo Kraia i organizatsia krest'ianskogo khozajstva. [Natural conditions of North-Caucasus Region and organization of the farmer's economy] *Materialy k Perspektivnomu Planu Vostochnoi i Srednei Azii i Kavkaza*. Severo-Kavkazskiy Krai. Red. by A. I. Ryzanov. M.: Vostochnyye Otdel. 1955. 244 p. 171 + 268 p.

Stavropol'skiy Krai. Zemel'noe Upravlenie, Prirodnye uslovia Severo-Kavkazskogo Kraia. P. I. Ryzanov. M.: Vostochnyye Otdel. 1955. 244 p. 171 + 268 p.

DRUZHININ, N.S.; TSYLBOV, P.P.; RYAZANOV, A.V., kand. tekhn. nauk,  
retsenzent; DANILOV, L.N., inzh., red.; MODEL', B.I.,  
tekhn. red.

[Course in mechanical drawing] Kurs cherchenia. Moskva,  
Mashgiz, 1964. 491 p. (MIRA 17:2)

RYAZANOV, A.V.; KHOKHLOV, I.A.; YATSKO, N.V.

Cutting in two chrome-tanned pigskins. Obm.tekh.opyt. [MLP]  
no.27:43-44 '56. (MIRA 11:11)  
(Tanning)



RYAZANOV, B. A.

Cand. Technical Sci.

"Investigation of Basic Salts of Ferric Iron by Methods Physicochemical Analysis in Connection With Their Application for Tanning." Sub 3 Jul 51, Moscow Technological Inst of Light Industry imeni L. M. Kaganovich

Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 480, 9 May 55

RYAZANOV, B.A., kand.tekhn.nauk, dotsent

Chromatographic investigation of aqueous solutions of isolated chromium sulfate complex compounds. Izv.vys.ucheb.zav.; tekhn.prom. no.5: 9-15 '60. (MIRA 13:11)

1. Moskovskiy tekhnologicheskoy institut legkoy promyshlennosti.  
Rekomendovana kafedroy neorganicheskoy i analiticheskoy khimii.  
(Tanning) (Chromium compounds)  
(Chromatographic analysis)

RYAFANOV, B.A., kand.tekhn.nauk, dotsent

Studying the composition of products olated in chromium and aluminum sulfates as dependent on basicity and aging. Izv. vys.ucheb.zav.;tekh.leg.prom. no.4:48-53 '61. (MIRA 14:10)

1. Moskovskiy tekhnologicheskoy institut legkoy promyshlennosti. Rekomendovana kafedroy obshchey neorganicheskoy i analiticheskoy khimii.

(Tanning) (Sulfates)

RYAZANOV, B.A., kand.tekhn.nauk, dotsent

Using the ion-exchange method for studying the complexes in olated  
solutions of chromium chloride. Izv.vys.ucheb.zav.; tekhn.prom.  
no.3:77-80 '61. (MIRA 14:7)

1. Moskovskiy tekhnologiceskiy institut legkoy promyshlennosti.  
Rekomendovana kafedroy neorganicheskoy i analiticheskoy khimii.  
(Chromium) (Ion exchange)

*RYAZANOV, B.A.*

USSR/Chemistry

Card 1/1 ; Pub. 151 - 1/42

Authors : Ryazanov, B. A.

Title : Investigation of basic Fe-salts

Periodical : Zhur. ob. khim. 24/9, 1477-1486, Sep 1954

Abstract : The difference in the behavior of  $\text{Fe}_2(\text{SO}_4)_3$  solutions when exposed to the effect of sodium hydroxide and potassium hydroxide was established by studying the basic sulfate salts of ferric oxide. The characteristics of the sedimentations obtained during the reaction of  $\text{Fe}_2(\text{SO}_4)_3$  with KOH and NaOH are described. Twelve references: 9-USSR; 2-German and 1-USA (1925-1947). Tables; graphs.

Institution : The Technological Institute of Light Industry, Moscow

Submitted : December 4, 1953

AUTHOR: Ryazanov, B.I.

Sov/106-58-2-4/16

TITLE: Choice of the Most Suitable Dimensions and the Design of Ferrite Aerials (Vybor naivygodneyshikh razmerov i raschet ferritovykh antenn)

PERIODICAL: Elektrosvyaz', 1958, Nr 2, pp 25 - 28 (USSR)

ABSTRACT: The usual form of a ferrite aerial is that of Figure 1. A short solenoid is mounted off-centre on a cylindrical rod. Figure 2 gives the inductance per unit length of the coil vs. the length/diameter ratio, in the absence of the core. Eqs.(1) and (2) give the effective height and inductance of the aerial in terms of core and coil constant which are plotted in Figures 3 and 4. Table shows the effect of various parameters on effective height and Q-factor when the inductance is constant. At long and medium wavelengths, the required Q can be obtained without difficulty and the coil-position may then be varied to effect tuning. There are 4 figures, 1 table and 3 references, 1 of which is Soviet, 1 French and 1 English.

SUBMITTED: July 3, 1957

Card 1/1 1. Antennas--Design 2. Antennas--Theory

RYAZANOV, B.I.

~~Selecting~~ the most efficient dimensions of ferrite antennas and  
designing them. *Elektrosviaz'* 12 no.2:25-28 F '58. (MIRA 11:2)  
(Radio - antennas)

ACCESSION NR: AP4013549

S/0133/64/000/001/0050/0052

AUTHORS: Kobyzhev, V. K.; Yershov, V. N.; Kuznetsov, A. F.; Mazurik, P. N.;  
Ryazanov, D. G.; Fiskes, E. Ya.

TITLE: Rolling two-layer sheets with the basic layer made of low-alloy steel

SOURCE: Stal', no. 1, 1964, 50-52

TOPIC TAGS: rolling, plating, low alloy steel, steel, 16GS low alloy steel,  
carbon steel, OKhl3 stainless steel, Kh18N10T stainless steel, St.3 steel, stain-  
less steel, corrosion, steel corrosion, steel mechanical properties, 3K steel,  
15K steel, 20K steel, regenerative furnace, continuous furnace

ABSTRACT: This work was carried out in order to study the surface quality and the  
mechanical properties of two-layer steel sheets. The samples were a basic sheet  
made of low-alloy steel (16GS) plated with stainless steels OKhl3 or Kh18N10T.  
The procedure followed was developed by the KMK (Kuznetsk Metallurgical Combine).  
One part of the samples was held at 1260C for 1.25 hours, at 1320C for 0.75 hours,  
and at 1310C for 1.5 hours. Temperature at the end of rolling was 1170-1180C, and  
rolling was completed either with or without edging. In the former case the plate

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ACCESSION NR: AP4013549

metal was ruptured in some cases; in the latter case the quality of the metal surface was much higher, and no peeling of the plate layer was observed. The remaining samples were heated in a continuous furnace to 1310-1330C for 4.5 hours. Temperature at the end of rolling was 1000-1010C. All the samples plated with steel Kh13N10F underwent thermal treatment at 900-930C after rolling, while samples plated with steel OKhl3 were held at 660C for 14-18 hours. The results obtained were satisfactory. They are presented graphically in Figs. 1 and 2 on the Enclosures. "I. L. Vaynshteyn, M. M. Bazhenov, A. V. Yakubson, and G. S. Publik participated in this work." Orig. art. has: 4 figures and 1 formula.

ASSOCIATION: Kuznetskiy metallurgicheskiy kombinat (Kuznetsk Metallurgical Combine)

SUBMITTED: 00

DATE ACQ: 03Feb63

ENCL: 02

SUB CODE: ML

NO REF SOV: 003

OTHER: 000

Cord 2/52

PLEKHANOV, P.S.; GOLOVANENKO, S.A.; KOBYZEV, V.K.; BULAT, S.I.; MIL'TO,  
Yu.R.; RYAZANOV, D.G.; BARANOVSKAYA, M.I.

Mastering the rolling of bimetal shapes for the agricultural  
machinery industry. Stal' 25 no.10:922-927 O '65.

(MIRA 18:11)

1. Kuznetskiy metallurgicheskiy kombinat i Tsentral'nyy nauchno-  
issledovatel'skiy institut chernoy metallurgii im. I.P. Bardina.

KOBYZEV, V.K.; YERSHOV, V.N.; KUZNETSOV, A.F.; MAZURIK, P.N.;  
RYAZANOV, D.G.; FISKES, E.Ya.

Mastering the rolling of two-layer sheets with a basic  
layer of low-alloy steel. Stal' 24 no.1:50-52 Ja '64.  
(MTPA 17:2)

1. Kuznetskiy metallurgicheskiy kombinat.

KOBYZEV, V.K.; RYAZANOV, D.G.

Thickness of the layer deposited on the grooves of rolling mill  
rolls following a master cam. Avtom. svar. 16 no.11:82-85 N '63.  
(MIRA 17:1)

1. Kuznetskiy metallurgicheskiy kombinat.

KNAPP, Konstantin Konstantinovich; RYAZANOV, D.N., red.; CHEKRYZHOV,  
V.A., red.izd-va; KHENOKH, P.M., ~~red.~~ red.

[Building and operating smokestacks for gas appliances]  
Ustroistvo i ekspluatatsiia dymokhodov ot gazovykh pri-  
borov. Izd.2., dop. i ispr. Moskva, Izd-vo MKKh RSFSR,  
1963. 119 p. (MIRA 16:8)  
(Chimneys) (Gas appliances)

12013  
S/207/62/000/004/002/006  
I024/I242

261410  
AUTHORS:

Korobeynikov, V.P., and Ryazanov, E.V. (Moscow)

TITLE:

The influence of a magnetic field on the propagation of plane and cylindrical shock waves

PERIODICAL:

Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no.4, 1962, 47-51

TEXT:

The self-similar problem of plane or cylindrical gas motion due to instantaneous energy release at the plane (or axis) of symmetry was investigated for both small and large magnetic Reynolds numbers. A strong explosion finite conductivity, and a magnetic field perpendicular to the velocity vector are assumed. For small magnetic Reynolds numbers the reverse action of the gas

Card 1/2

RYAZANOV, F., polkovnik

Selection of a position for a radar station by means of the map.  
Voen.vest. 41 no.12:80-83 D '61. (MIRA 15:3)  
(Radar, Military)

RYAZANOV, F., podpolkovnik

Rule for communication officers. Voen.svia. 16 no.4:37-41

Ap '58.

(MIRA 11:4)

(Telecommunication--Equipment and supplies)



RYAZANOV, E.A., inzh.; POLIBINA, T.D., inzh.; NAZAROVA, L.F., inzh.;  
KARLINER, I.N., inzh.; MITROKHINA, A.P.; tekhnik; VORONKOVA,  
A.S.; tekhnik; BAVYKINA, Z.I., tekhnik; VINNITSKIY, D.Ya.,  
inzh., red.; VELITSYN, B.L., tekhn. red.

[Norms for the expenditure of metal and pipe in the  
manufacture of nonstandard heat equipment and low-pressure  
pipelines for thermal electric power plants] Normy raskhoda  
prokata i trub na izgotovlenie nestandartnogo teplomekhaniche-  
skogo oborudovaniia i truboprovodov nizkogo davleniia dlia  
teplovykh elektrostantsii. Utverzhdeny Tekhnicheskim upravle-  
niem Ministerstva stroitel'stva elektrostantsii (Reshenie  
No. 167 ot 31 iuliia 1961 g. Moskva, Orgenergostroi 1962.  
230 p. (MIRA 16:10)

1. Vsesoyuznyy institut po proyektirovaniyu organizatsii ener-  
geticheskogo stroitel'stva "Orgenergostroy."  
(Electric power plants) (Pipe mills)

RYAZANOV, F. A.

Tractors - Motors

Polishing casehardened cylinder cases of tractor engines with heads with abrasive bits.  
Avt. trakt. prom. No. 2, 1953.

Monthly List of Russian Accessions, Library of Congress  
June 1953. UNCL.

RYAZANOV, P. A.

RYAZANOV, P. A.: "The use of large-grain grinders to grind the tempered cylinder liners of tractor engines". Moscow, 1955. Min Higher Education USSR, Moscow Automotive Mechanics Inst. (Dissertation for the Degree of Candidate of Technical Sciences)

SO: Knizhnaya Letopis', No. 40, 1 Oct 55

NEKRASOV, A.M., inzh.; RYAZANOV, F.A., inzh.

Thermal electric power plants from the beginning of the plan of  
the State Commission for the Electrification of Russia to the  
present. Elek. sta. 31 no. 12:5-9 D '60. (MIRA 14:5)  
(Electric power plants)

RYAZANOV, E. V., KOROBEYNIKOV, V. P. (Moscow)

"Some Solutions of One-Dimensional Magnetohydrodynamic Problems and Their Application to Problems of Shock Wave Propagation."

report presented at the First All-Union Congress on Theoretical and Applied Mechanics, Moscow, 27 Jan - 3 Feb 1960.

SOV/133-59-9-2/31

AUTHORS: Ryazanov, E.F., Netrebko, P.G., Bokryshkin, V.L.  
Yalovoy, D.S., Brusov, L.P. and Rabinovich, G.B.

TITLE: Mastering of a High Capacity Blast Furnace

PERIODICAL: Stal', 1959, Nr 9, pp 770-776 (USSR)

ABSTRACT: In September 1958, the largest furnace in the USSR (and Western Europe) was blown in, its working volume 1719 m<sup>3</sup>. The profile and main dimensions of the furnace are shown in Fig 1. The blast is heated in 4 stoves of 27135 m<sup>2</sup> heating area each, allowing a blast temperature of 1000 - 1050°C to be maintained. The blast is supplied by a blower of a capacity of 4000 m<sup>3</sup>/min at 3.8 atm abs. The furnace was operating with about 85% of fluxed sinter (basicity 0.8 - 1.0) containing 40-45% of fines 0 - 12 mm) and a high top pressure of 1.25 to 1.40 atm. Changes in the output, ore load and blast volume during the first months of operation are shown in Fig 2. Furnace operating data for subsequent operation (up to the end of 1958) are given in table 1 and analyses of iron and slag in Table 3. During December 1958, the average daily output of the furnace rose to 2231 tons (7 casts per day) at a coke rate of 749.6 kg/ton and slag volume of 882.5 kg/ton

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SOV/133-59-9-2/31

# Mastering of a High Capacity Blast Furnace

(slag basicity 1.26). It was found that the furnace was very sensitive to the degree of filling of the hearth with liquid products (Fig 3). Any retardation in the casting or removal of slag considerably decreases the rate of descent of burden materials. Changes in the composition of the gas phase along the hearth radius (tuyere level) - Fig 4, changes in the CO<sub>2</sub> content of the top gas along the throat radius - Fig 5; operating conditions and material balances for two operating periods - table 3. From the operating experience gained it is concluded that large furnaces can operate efficiently at large outputs. An increase in the sinter basicity of 0.1 increases the output of the furnace by 1.2%. Some deterioration in the size distribution of sinter caused by an increase in basicity did not cause any noticeable deterioration in the furnace operation. An increase in the blast volume of 100 m<sup>3</sup>/min increases the output by 1.3%. The depth of the combustion zone in the furnace was found to be about 1200 mm which for a furnace of 9100 mm diameter is insufficient and some measures should be taken to increase it. An increase in

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Mastering of a High Capacity Blast Furnace

the blast temperature from 840° to 970°C and the moisture content from 30 to 40 g/m<sup>3</sup> decreased the coke consumption by 2.6% and increased the output by 3.7%. Whereupon the utilization of carbon monoxide for reduction increased from 39 to 41%, the degree of direct reduction somewhat increased and the participation of hydrogen in the reduction amounted to about 69%. The following deficiencies in the furnace design are listed: a) blast main with three 90° bends which lead to an increase in the pressure drop; b) lack of balance between the capacity of the scale car and skips which causes some difficulties in the furnace charging (not specified) and c) the positioning of tunnels for power cables and water mains in places where, in case of a break out, the penetration of liquid iron is possible. There are 5 figures and 3 tables.

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SOV/133-59-9-6/31

AUTHORS: Afanas'yev, S.G., Shumov, M.M., Epshteyn, Z.D.  
Ryazanov, F.F., Kozin, G.N. and Kukuruznyak, I.S.

TITLE: Use of Oxygen in the Converter Melting Shop of the  
"Krivorozhstal'" Works

PERIODICAL: Stal', 1959, Nr 9, pp 787-792 (USSR)

ABSTRACT: An outline of the composition of the converter melting shop including some details regarding oxygen blowing equipment and the method used for the cleaning of the converter waste gas, the influence of the composition of iron on the composition of the finished steel and some operating results are given. Main points:  
The tuyere supplying oxygen to the converter can be moved with a special mechanism vertically up and down and rotate around the vertical axis by 120 to 128° (Fig 1). Gases leaving the converter are passed successively through a hood, lined stack, waste gas main, scrubber, Ventury, cyclone, fan into the chimney. The scrubber ( 5 m dia, height of the cylindrical part 18 m) serves mainly to cool the gas and to trap larger dust particles; it consumes 200 to 300 m<sup>3</sup>/hr of water at a pressure of 6 to 9 atm. Due to the high velocity of the gas (60 to

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Use of Oxygen in the Converter Melting Shop of the "Krivorozhstal' Works

120 m/sec) the water is dispersed into a fine mist. In the Ventury tube with a throat diameter of 510 mm, particles of mist with suspended solids coagulate into comparatively large drops of a slurry which are caught in the cyclone and passed into the Dorr pond. No data on the degree of cleaning of the gas are given. The composition of pig iron used varies within the following limits: Si, 0.50 - 0.80; Mn, 1.0 - 1.4; S, 0.030 - 0.055; P, 0.09 - 0.11. The influence of silicon in pig iron on the content of phosphorus in the finished steel is shown in Fig 3. The optimum amount of silicon in pig was found to be 0.4 to 0.6%. Desulphurization of metal deteriorates with decreasing manganese content in the pig iron. Pig iron containing 0.055% sulphur should contain not less than 1.44% of manganese. The quality of lime has a considerable influence on the rate of formation and nature of the slag. In view of a considerable proportion of incompletely fired lime (up to 20%) an addition of bauxite (1.5 to 2%) is used. Changes in the composition of metal during blowing are shown in Table 1 and frequency distribution of costs with various levels

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Use of Oxygen in the Converter Melting Shop of the "Krovorozhstal'"  
Works

of sulphur and phosphorus content for various types of steel produced in Table 2. Various types of tuyere nozzles for blowing oxygen were tested (Fig 4), the best results were obtained with a cylindrical nozzle of 65 mm diameter with the outlet widening to 75 mm. The optimum rate of blowing oxygen was found to be about 105 m<sup>3</sup>/min at a distance of 800 to 1000 mm between the nozzle and surface of the metal. Consumption of materials per ton of steel mean weight and duration of a heat are shown in Table 3. The average weight of heat varied from 33 to 42 tons. Individual heats with charges of 70 to 72 tons confirmed the possibility of blowing a large amount of metal with 1 tuyere. At present, Gipromez is planning designs for the transfer of converter for 53 to 55 ton charges with subsequent bottom pouring of metal into 6 eight ton ingots. It is concluded that some improvements in the productivity can be obtained by operation without the intermediate removal of slag, providing the quality of raw materials is improved. The durability of converter lining varied

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Use of Oxygen in the Converter Melting Shop of the "Krivorozhstal'" Works

from 78 to 170 heats. The quality of steel produced corresponded to requirements of GOST 380-50 for open hearth steel (nitrogen content on average 0.006%). The actual degree of desulphurization obtained amounted to 50% (of the whole sulphur introduced into the bath with materials charged). The construction of 80 to 100 ton converters is considered advantageous. There are 4 figures and 3 tables.

ASSOCIATIONS: TsNIICHM and

Zavod "Krivorozhstal'" ("Krivorozhstal'" Works)

Card 4/4

RYAZANOV, G. A.

Lectures with demonstrations of the theory of electromagnetic field. Moskva, Gos.  
izd-vo tekhniko-teoret. lit-ry, 1952. 216 p. (52-42209)

QC533.R5

SUKACHEV, A.P., dotsent, kandidat tekhnicheskikh nauk; RYAZANOV, G.A., kandidat fiziko-matematicheskikh nauk (Leningrad); GUREVICH, L.M., doktor fiziko-matematicheskikh nauk (Leningrad); GEMEROZOV, M.V., inzhener (Saratov).

Terminology of theoretical electric engineering. Elektrichestvo no.11:76-80 N '53. (MLBA 6:10)

1. Khar'kovskiy politekhnicheskii institut im. Lenina (for Sukachev).  
(Electric engineering--Terminology)

*RYAZANOV, G.A.*

AID P - 2015

Subject : USSR/Electricity

Card 1/2 Pub. 27 - 19/31

Author : Ryazanov, G. A., Kand. of Phys. Math. Sci. Dotsent,  
~~Leningrad~~

Title : The field as an aspect of matter (Discussion of an  
article by O. B. Bron, this journal, no.7, 1954,  
& nos. 2 & 3, 1955)

Periodical : Elektrichestvo, 4, 78-79, Ap 1955

Abstract : The author thinks that O. B. Bron left certain basic  
problems unexplained and often used a confusing  
terminology. For example, he did not explain how to  
connect the "transformation" of the mass, energy, etc.  
occurring in the interaction of material objects with  
the idea of transformations of matter. This led him  
to such inaccurate expressions as that the field is  
transformed into heat. Heat is not matter, but only  
**one** of the forms of movement of matter, says the  
author, and points out some other inaccuracies of a  
similar nature.

AID P - 2015

Elektrichestvo, 4, 78-79, Ap 1955

Card 2/2 Pub. 27 - 19/31

Institution: None

Submitted : No date



SOV/124-57-9-10734  
Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 9, p 128 (USSR)

AUTHOR: Ryazanov, G. A.

TITLE: The Employment of Electrical Vortex Fields in Analog Studies of Two-dimensional Circulatory Currents by the Electrohydrodynamic Analogy Method (O primeneniі vikhrevykh elektricheskikh poley pri modelirovaniі ploskikh tsirkulyatsionnykh potokov metodom EGDA)

PERIODICAL: Tr. Leningr. in-ta inzh. vod. transp., 1956, Nr 23, pp 219-222

ABSTRACT: A description of a system for analog studies of two-dimensional circulatory currents by the electrohydrodynamic analogy method which differs essentially from the systems known heretofore [Taylor, G. I., Sharman C. F., Proc. Roy. Soc., 1928, Vol A121, pp 194-217; Patrashev A. N., Gidromekhanika (Fluid Mechanics), Moscow, Voen.-mor. izd-vo, 1953; RZhMekh, 1955, Vol 9, abstract 4931]. The novel system is based upon the utilization of the electrical induction field which surrounds every A-C electromagnet and produces Foucault currents in any conductor. The induction field is superimposed upon the electrical potential field, the latter being produced in the usual fashion. Thus, if the current being studied by the analog method

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The Employment of Electrical Vortex Fields in Analog Studies (cont.) SOV/124-57-9-10734

exhibits a vortical singularity, the model is made with a small opening which accommodates an electromagnet in the form of a thin rod; the current passing through the electromagnet is so selected that a proper relationship is obtained between the velocity at infinity and the circulation along a contour containing the singularity. The potential at the busbars must vary in phase with the electrical induction field. The hydrodynamic field of an airfoil is studied in an analogous manner. Parallel busbars create an electric field in a sufficiently large rectangular sheet of a conducting material; the field corresponds to the air flow impinging on the airfoil. A cutout in the shape of the profile being investigated and placed at a prescribed angle of attack is located in the center of the sheet; a rod-like electromagnet, inserted into the cutout perpendicularly to the plane of the conducting sheet, serves to simulate the attached vortices. The electromagnet must be of such length as to permit disregarding the dispersion of the magnetic flux at its center. The voltage passing through the electromagnet is selected with the aid of the Zhukovskiy-Chaplygin postulate and is given a value which ensures that the stream lines which form the airfoil contour separate from the profile precisely at the prescribed edge. The lift coefficient is determined from the measured circulation of the  $E$  vector and from its value at infinity. The same method is employed for an analog study of the field of relative velocities about a cylindrical body of arbitrary cross-sectional

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The Employment of Electrical Vortex Fields in Analog Studies (cont.)

shape rotating in a motionless liquid. A general view of the apparatus is given, together with a brief description of the measuring techniques employed. The conducting medium consists of aluminum foil or low-resistance conductive paper. The measurements are performed with the aid of a vibration galvanometer of the VG-400 type.

P. F. Fil'chakov

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RYAZANOV, G.A.

3-10-24/30

AUTHOR: Ryazanov, G.A., Dotsent

TITLE: The Use of Electro-Conducting Paper for the Investigation of the Theory of Fields (Primeneniye elektroprovodnoy bumagi pri izuchenii teorii polya)

PERIODICAL: Vestnik Vysshey Shkoly, 1957, # 10, pp 72-74 (USSR)

ABSTRACT: For the last two years the chair of physics of the Leningrad Engineering Institute of Water Transport (Leningradskiy institut inzhenerov vodnogo transporta) has utilized electroconducting paper in laboratories and lecture demonstrations.

Facsimilies of such paper, made in the form of posters, simplify the investigation of stationary electric fields. Isopotential and power lines can be indicated by colored pencils and the same model can be utilized for the solution of direct and reciprocal problems.

The paper can be utilized for the following experiments: investigations of the structure of stationary electric fields in conductors of different forms, the demonstration of the laws of refraction of isopotential and power lines in the limits of mediums with different conductivity, the investigation of static fields, the distribution of potentials in different electric circuits, methods of electrodynamic

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The Use of Electro-Conducting Paper for the Investigation of the Theory  
of Fields

analogy, investigations of filtration under hydrotechnical  
installations, the potential and circular flow of substances,  
etc.

The chair has already a considerable collection of these  
appliances, to help demonstrate the laws of Joule-Lenz, Ohm  
and Kirchhoff.

There are 4 photographs and 1 figure.

ASSOCIATION: The Leningrad Engineering Institute of Transport Waterways  
(Leningradskiy institut inzhenerov vodnogo transporta)

AVAILABLE: Library of Congress

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RYAZANOV, G.A.

Modeling electrical fields on conductive paper. Izv. vys. ucheb.  
zav.; fiz. no.4:98-105 '59. (MIRA 13:3)

1.Leningradskiy institut vodnogo transporta.  
(Electric fields)

L 42061-65 EWT(1)/EWP(m)/EWA(d)/FCS(k)/EWA(1) Pd-1

ACCESSION NR: AP5010926

UR/0286/65/000/007/0110/0110

AUTHOR: Ryazanov, G. A.

TITLE: A method for simulating a flow past a hydrofoil. Class 42, No. 169811

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 7, 1965, 110

TOPIC TAGS: hydrofoil, electrohydrodynamic analogy, simulation test, boundary layer flow

ABSTRACT: This Author Certificate presents a method for simulating the flow past a hydrofoil near a free surface. The method is based on the electrohydrodynamic analogy and involves the application of electrically conductive paper. To simulate a boundary condition of "small waves," uniformly distributed spot electrodes are used for discrete feeding of the model.

ASSOCIATION: none

SUBMITTED: 23Jan64

ENCL: 00

SUB CODE: ME

NO REF SOV: 000

OTHER: 000

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D234/D308

10-8000

AUTHOR: Ryazanov, G.A.

TITLE: Simulation by the method of continuous media with the use of a solenoidal electric field

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 1, 1963, 42, abstract 1B255 (Dokl. 4-y Mezhvuz konferentsiy po primeneniyu fiz. i matem. modelirovaniya v razlichn. otraslyakh tekhn. Sb. 1. M., 1962, 129-144)

TEXT: For electrical simulation of plane and axially symmetric potential flow with the velocity circulation around the bodies in the flow, also for plane and 3-dimensional vortex flow, the author uses a variable magnetic field which induces a corresponding circulatory or solenoidal electric field in the electric model. In the first case the magnetic field is localized in the core of a toroidal electromagnet passing inside the outline of the body cut out of conducting material in the model. A translational (noncirculatory) stream is simulated in the usual way by a current in the model which

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KONOVALOV, I.M., doktor tekhn.nauk, prof.; RYAZANOV, G.A., kand.fiziko-  
matematicheskikh nauk, dotsent; BOROZNA, D.I., inzh.

Applying the theory of a turbulent boundary layer and the electro-  
hydrodynamic analogy method to a study of flow around ships and  
their interaction with the propellers. Trudy LIIVT no.26:82-89  
'59. (MIRA 14:9)

(Ships--Hydrodynamics)

RYAZANOV, G.A. (Leningrad)

Simulating circulation flows by the method of electrohydrodynamic  
analogy using a rotational electric field. Izv.AN SSSR.Otd.tekh.  
nauk.Mekh.i mashinostr. no.3:68-77 My-Je '61. (MIRA 14:6)  
(Fluid dynamics—Electromechanical analogies)

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S/179/61/000/003/009/016  
E140/E335

AUTHOR: Ryazanov, G.A. (Leningrad)

TITLE: Modelling circulating flow by the electrodynamic analogy with eddy electric fields

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Mekhanika i mashinostroyeniye. no. 3, 1961, pp. 68 - 77

TEXT: Considering the equations for the eddy electric field in a conducting medium about an alternating magnetic field within a dielectric body, the author finds an analogy between the equations describing such a system and the equations of circulating flow in an ideal fluid about a geometrically similar body. In this analogy, we have the following dual quantities:

Field intensity	Velocity
Field circulation	Velocity circulation
Magnetic-core cross-section	Cross-sectional area of vorticial filament
Curly of vector E	Curly of velocity
Magnetic flux	Angular velocity

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E140/E335

Modelling circulating flow ....

Conditions satisfied by  
contours enclosing and not  
enclosing the magnetic  
flux

Electric potential

Relation between potential  
and field intensity

Potential jump at the con-  
ventional barrier trans-  
forming a doubly-connected  
region to a simply-  
connected one

Laplace equation for the  
electric potential

Boundary conditions at  
boundary between an ideally  
conducting medium and  
vacuum or dielectric and at  
infinity for infinitely  
conducting medium

Card 2/3

Conditions satisfied by contours  
enclosing and not enclosing the  
vorticial filament

Velocity potential

Relation between velocity  
potential and velocity

Velocity potential jump at the  
conventional barrier trans-  
forming a doubly-connected  
region to a simply-connected one

Laplace equation for the  
velocity potential

Boundary conditions at the fluid  
surface and at infinity for  
infinite flow

X

Modelling circulating flow ....

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S/179/61/000/003/009/016  
E140/E335

Biot-Savart law defining the vector  $E$  in an ideal conductor      Biot-Savart law defining velocity in an unbounded fluid.

From this analogy the author indicates how to construct a model using either electrolytic tanks or resistive planes. An experimental example is given for a case with known theoretical solution, indicating excellent agreement between theory and experiment. Acknowledgments are expressed to M.M. Fetisov, A.O. Ditman, S.M. Filatov for assistance.

There are 11 figures, 1 table and 3 Soviet-bloc references.

SUBMITTED:      January 28, 1961

X

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RYAZANOV, G.F.

Morphology and taxonomy of the genus *Protriticites* Putrja, 1948.  
Dokl.AN SSSR 123 no.4:752-755 D'58. (MIRA 11:12)

1. Rostovskiy-na-Donu gosudarstvennyy universitet. Predstavleno  
akademikom A.L.Yanshinym.

(Donets Basin--Foraminifera, Fossil)

RYAZANOV, G.F.

Genus *Pseudotriticites* Putrja, 1940. Dokl. AN SSSR 123 no.5:  
933-936 D '58. (MIRA 12:1)

1. Predstavleno akademikom A.L. Yanshinym.  
(Russia, Southern--Foraminifera, Fossil)

3(0)

AUTHOR: Ryazanov, G. F.

SOV/20-123-5-45/50

TITLE: The Genus Pseudotriticites Putrja, 1940 (O rode Pseudotriticites Putrja, 1940)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 5, pp 933 - 936 (USSR)

ABSTRACT: The author is convinced on the basis of a reference study (Refs 1-7) that Pseudotriticites Putrja is nothomogenous. After species of the genres Putrella Rauzer-Chernousova (Ref 5) and Quasifusulinoides Rauzer-Chernousova et Rosovskaya (Ref 6) are excluded, 4 species of Pseudotriticites along with the generotype remain. These were described by F. S. Putrja as Fusulina: F. donbassica, F. stepanovi, F. gembizkii and F. lebedevi. An analysis of data in the literature as well as studies of the author's own collection indicates that the generotype and the 3 aforementioned species show no substantial difference from the fusulinids. The author maintains that new genres can not alone be determined on the basis of this or that porosity. The author describes again F. donbassica Putrja (Fig 1 a,b), F. lebedevi Putrja (Fig 1 v) and Quasi-

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The Genus *Pseudotriticites* Putrja, 1940

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*fusulinoides fusulinoides* (Putrja) (Figs 1g - ye). The described specimens are not different to any degree worth mentioning from the corresponding holotypes, although they are from another locality (thus not topotypes). The author could identify no forms which corresponded to the genus (Ref 2): they may therefore not exist. From the foregoing, it is seen that the genus *Pseudotriticites* should now be considered a non homogenous form. The species which up to now were included under that genus can be delegated rightfully to the genera *Fusulina* Fischer, *Putrella* Raus. and *Quasifusulinoides* Raus. et Rosovskaya. There are 1 figure and 7 Soviet references.

PRESENTED: May 31, 1958, by A. L. Yanshin, Academician

SUBMITTED: May 28, 1958

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RYAZANOV, G.F.

Morphology and systematics of the genus *Protriticites* Putja,  
1948. Izv. vys. ucheb. zav.; geol. i razv. 1 no.8:43-48  
Ag '58. (MIRA 12:9)

1. Rostovskiy gosudarstvennyy universitet, Kafedra istoricheskoy  
geologii.

(Foraminifera, Fossil)

3(0)

AUTHOR:

Ryazanov, G. F.

SOV/20-123-4-50/53

TITLE:

The Morphology and Taxonomy of the Genus *Protriticites* Putrja, 1948 (Morfologiya i sistematika roda *Protriticites* Putrja, 1948)

PERIODICAL:

Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 4, pp 752-755 (USSR)

ABSTRACT:

The primary difference between *Protriticites* Putrja and *Fusulinella* is found in the structure of the shell walls (Refs 1,4,6,7). According to the author's studies the difference between the shell of this genus and earlier ontogenetic stages cannot be determined. The structure of the shell wall of *Protriticites* and the formation of the shell are described (Fig 1 a,b). The author concludes that the coarse porosity and the development of the walls are related correlatively. The pores are described in scientific literature as primarily gas-exchange canals. However, the author thinks this is hardly the only purpose. As long as the organism lived, the pores were surely filled with protoplasm. This provided a good connection between the parts of the cell which were in separate chambers of the shell. The pores of the

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The Morphology and Taxonomy of the Genus  
Protriticites Putrja, 1948

SOV/20-123-4-50/53

outermost whorl apparently allowed the protoplasm to protrude as countless threads. This provided a complete and free exchange with the environment, and as a result the inner functions of the organism could be better carried out, and, furthermore, the shell could grow more. This demonstrates the life-important roll of the pores. Their origin and complex development was an advanced adaptive characteristic. It is often difficult to determine the genus of a single specimen. The "tectori" develop irregularly and combine in different ways with the shell elements to produce characteristics. Thus these forms (for example *Obsoletes vetus* from limestone N<sub>5</sub>, Ref 8) resemble the protriticitids on the one hand and the obsoletids on the other (Fig 1d). G. D. Kireyeva (Ref 1) described genus *Obsoletes* and thought that it descended from *Protriticites* or from *Fusulinella*. This idea was proved wrong. *Obsoletes* merely has some of the earlier development stages of *Protriticites*, in which some of the characteristics of *Fusulinella* are found. The author concludes that the protriticitids are ancestral forms of the obsoletids. The

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